communicating with the earth, behave, beyond 120°, as dielectrics of zero inductive power. With prolonged heating, the conductivity along the axis quite disappears. Water plays a capital *rôle* in the conductivity of a great many dielectrics (possibly in all). With plates of baked porcelain kept moist the various types of conductivity could be reproduced. The electromotive forces of polarization of moist porous bodies may attain several hundred volts.

PRAIRIE dogs, it appears from a recent letter by Dr. Wilder to *Science*, lack the sense of distance. At Cornell University, several individuals walked off chairs, tables, and window-sills unhesitatingly. This is thought to be due to the nature of their usual habitat, a plain, with no sharper inequalities than burrows and mounds. One adult female seemed to have wonderful immunity from the ill-effects of falls: it once fell from the top of an elevator 21 feet high, and another time from a window-sill, about as high, on a granite pavement, but soon recovered. These animals respond to sudden sound by erecting the body and barking, and the nervous mechanism involved seems to be largely reflex, rapidly exhausted, but nearly or quite uncontrollable; indeed, one of those falls seems to have been due to an unguarded erection of the body on hearing a large clock strike.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus* ♂) from India, presented by Mr. Jesser Coope, F.Z.S.; a Nightingale (*Daulias luscinia*), British, presented by Mr. J. Young, F.Z.S.; two Green Doves (*Chalcophaps indica*) from Ceylon, presented by Mrs. Thompson; a Common Chameleon (*Chamæleon vulgaris*) from North Africa, presented by Master E. S. Forwood; two Short-tailed Wallabys (*Halmaturus brachyurus*) from Australia, received in exchange; a Brown Capuchin (*Cebus fatuellus* ♂) from Brazil, a Squirrel Monkey (*Chrysothrix sciurea*) from Guiana, a Banksian Cockatoo (*Calyptorhynchus banksii*) from New South Wales, deposited; two Red-vented Bulbuls (*Pycnonotus hæmorrhous*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

OBJECTS FOR THE SPECTROSCOPE.

Sidereal Time at Greenwich at 10 p.m. on September 11 = 21h. 24m. 28s.

Name.	Mag.	Colour.	R.A. 1890.	Decl. 1890.
			h. m. s.	° ′
(1) G.C. 4600	—	—	20 41 7	+30 19
(2) D.M. + 44° 3877 ...	6·7	Reddish-yellow.	21 31 51	+44 53
(3) 2 Pegasi	4·5	Yellowish-red.	21 24 58	+23 10
(4) δ Equulei	4·5	Whitish-yellow.	21 9 6	+ 9 34
(5) α Equulei	4·0	White.	21 10 18	+ 4 45
(6) 238 Schj.	7·4	Yellowish-red.	20 10 40	−21 35
(7) S Vulpeculæ	Var.	Yellow-red.	19 43 53	+27 1

Remarks.

(1) In the General Catalogue this nebula is described as "a very remarkable object; pretty bright; considerably large; extremely irregular figure; *k* Cygni involved." The spectrum, as observed by Dr. Huggins, is a continuous one with a suspicion of an unusual brightness in the region beyond F. The excess of blue light is probably due to the radiation of some substance, most likely carbon, added to a dim and short continuous spectrum. The green flutings would in that case be masked by continuous spectrum, and the result would be a spectrum apparently continuous in the green and discontinuous in the blue. This discontinuity should be looked for in the nebula spectrum, and comparisons made with the carbon flutings.

(2) This star has a spectrum of Group II. "of extraordinary beauty," all the bands 1–9 being very wide and very dark (Dunér). It is probably a star of mean condensation, and the bright carbon flutings should therefore be well seen.

(3) The spectrum of this star may advantageously be studied in connection with the observations of stars which have a spectrum hitherto described as of the solar type. It is one of a very late stage of Group II., the distinctive dark bands being very narrow, so that the spectrum approaches one of Group III. The *lines* which are seen at this stage will in all probability be continued to Group III. stars, and will therefore serve as criteria for distinguishing between stars of Group III. and stars of Group V.

(4) Vogel writes the spectrum of this star as II.*a* (I.*a*), which means that the star is either at a late stage of Group III., or an early one of Group V. Its precise position on the "temperature-curve" may be determined by reference to the criteria mentioned in the note on (3).

(5) The spectrum of this star is one of Group IV.

(6) Although this star is far from being a faint one compared with many other stars of Group VI., very few details have been observed in its spectrum, either by Secchi or Dunér. Dunér simply states that the spectrum consists of three zones, the blue being very weak. The intensity of band 6 (λ 564) relatively to band 9 (λ 517), and other details, should be noted.

(7) This is a variable of Group II. of very small range and short period. The mean magnitude at maximum is about 8·85, and that at minimum 9·95. The mean period is about 67·8 days, and the increase to maximum is much more rapid than the decrease to minimum, the former occupying 20·6 days, and the latter 47·2. According to Dunér, the spectrum is only feebly developed, and this is exactly what it should be if Mr. Lockyer's view as to the constitution of this class of bodies be correct. The central swarm being well advanced in condensation, only revolving swarms of short period will be effective in producing changes of light, because long period swarms will pass clear of the central swarm at periastron. It is only to be expected, therefore, that a well advanced, or "feebly-developed" spectrum should be associated with a short period in variables of Group II. Under these circumstances it is not likely that bright hydrogen lines will appear at maximum, but an observation of their absence will be of value, and other variations may occur. There will be a maximum about September 15.

A. FOWLER.

OBSERVATIONS OF THE COMPANIONS TO BROOK'S COMET (V. 1889).—Mr. E. E. Barnard, in *Astronomische Nachrichten*, No. 2988, gives the physical and micrometrical observations of the companions to this comet made with the 12-inch and 36-inch refractors of the Lick Observatory, and those made elsewhere. It will be remembered that Mr. Barnard discovered two companions to Brook's comet on August 2, 1889, and two others on August 5. His remarks on the appearance of the companions, and the physical changes which they underwent from the date of discovery, until they disappeared from sight, are very important. Two of the companions seemed to undergo the same process of disintegration. Beginning with a nucleus and a tail, each became enlarged, diffused, and fainter, until it had dissipated into space. In some concluding remarks Mr. Barnard writes: "I have no doubt but that the great telescope would readily reveal more unknown nebulæ than the entire number now contained in the latest catalogue of Dreyes," and the number of unknown nebulæ incidentally found by him during these observations supports this assertion.

PARALLAX OF β ORIONIS.—In the *Observatory* for September, Dr. Gill has a note on the parallax of β Orionis. The star is situated near one corner of the nebulous area encircled by α Orionis, Lalande 11382, Lalande 11329, ω Orionis, ψ Orionis, and β Eridani, and the observations show that it has a negative parallax of about 0″·17 relative to the near parallax of the stars D.M. − 7° 997 and − 8° 1078, and therefore belongs to a more distant system. It also results from the calculations that the former star and θ Orionis are members of an immensely more remote system than the latter one. The reductions were suggested by an examination of a photograph of the region about the Orion nebula taken under the direction of Prof. E. C. Pickering.

CARL FREDERIK FEARNLEY.—The death of this eminent Norwegian astronomer occurred on the 23rd ult. at Christiania. He was born at Frederikshald on December 19, 1818. In 1844 he became attached to the Observatory of Christiania University as an assistant, and since 1861 has been the Director. He was made a Professor of Astronomy in 1857.

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The deceased astronomer published many observations of planets, comets, and the sun, and directed some attention to the determination of the height of the aurora borealis. He also published a memoir on atmospheric refraction, and participated in many geodetical observations.

Fearnley's death is severely felt by those with whom he came in contact.

UNITED STATES NAVAL OBSERVATORY, WASHINGTON.—The report of the superintendent of the U.S. Naval Observatory for the year ending June 30, 1889, has just been issued, and contains an account of the work done in each department.

The large equatorial has been employed in observing double stars and the satellites of Saturn; attention also being paid to the division on the ring and to the shadows.

Seventeen hundred observations have been made with the transit circle since October 9, 1888; of this number 68 were of the sun, 60 of the moon, 93 of the major planets, 18 of the minor planets, and 5 of Comet *e* 1888.

The 9·6-inch equatorial has been used for the identification of stars whenever necessary, and for the observations of small planets, comets, and occultation of stars by the moon. During the past year 3 comets were seen and observed whenever possible. Two nights a week this instrument is set apart for the accommodation of visitors, and permits for 1665 visitors were issued.

Assistant-Astronomer H. M. Paul, who has for the last year and a half been here observing suspected variables, has just discovered a new variable in the constellation Antlia, with a period of less than 12 hours, the shortest period yet known.

The chronometer and time service, under the charge of Lieutenant Taylor, have been doing good work. Fifty-six chronometers received from the makers, cleaned, and repaired, were tested in the temperature-room for a period of about two months. Chronometers were issued to eleven ships and one shore station, and the same number were received back.

No alteration has been made in the routine of sending out time signals, which are telegraphed every day, Sundays and holidays excepted.

In the magnetic department under the charge of Ensign Marsh, observations have been made on Tuesdays each week for the determination of the absolute horizontal intensity, and on each month they were made with the inertia cylinder attached to the magnet. Observations on the magnetic inclination, using three needles in rotation, were made every Monday and Friday. Two seismoscopes and a seismograph have been added to the stock of instruments, and they have been set up and are in good working order.

The library, which has lately been placed under the charge of Assistant-Astronomer Paul, in addition to his other duties, contains, up to June 30, 12,226 volumes and 2696 pamphlets, of which the accessions, since the last Report, have been 308 in number, 235 volumes and 73 pamphlets.

The appendix contains a report of the work done during the past year, by Prof. William Harkness, who was attached for special duty as a member of the Transit of Venus Commission, and had charge of the reductions and computations of the observations of 1874 and 1882. The result of his work is the determination of the sun's distance to be 92,455,000 miles, with a probable error of 123,400 miles.

SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, September 3.—Mr. Henry T. Stainton, F.R.S., in the chair.—Mr. C. Fenn exhibited and remarked on specimens of *Eupithecia satyrata*, *Eudorea ambigualis*, and *Tortrix viburnana*, from Darlington.—Mr. H. Goss exhibited, on behalf of Mr. Martin S. Higgs, a remarkable variety of *Melitæa aurinia* (*artemis*), taken a few years ago, in Gloucestershire, by Mr. Joseph Merrin.—The Rev. Dr. Walker communicated some observations on the entomology of Iceland, and gave an account of his recent travels in that island. He stated that he had taken *Bombus terrestris* this year, for the first time, in the north-west of Iceland, from which quarter of the island it had not been recorded by Dr. Staudinger; he also referred to the enormous numbers of Ichneumonidæ and Diptera which he had noticed in the island. He further stated that in 1889, in the months of June and July, *Noctua conflua* was the most abundant species of Lepidoptera in Iceland; but that this year, in July and August, *Crymodes exulis* was the prevailing species, and that *Charæas graminis* and *Coremia munitata* also occurred in great numbers. In reply to a question by Mr. Stainton, Dr. Walker said that the flowers chiefly frequented by the humble-bees were those of a small species of white Galium (probably *Galium saxatile*) and *Viola tricolor*. Dr. Walker also read notes on *Calathus melanocephalus* collected in Iceland and the Faroe Isles in June and July 1890. Messrs. M'Lachlan, Stainton, Jenner Weir, Stevens, Jacoby, Lewis, and others took part in the discussion which ensued.—Mr. Arthur G. Butler communicated a paper entitled "Further Notes on the Synonymy of the Genera of Noctuites."

PARIS.

Academy of Sciences, September 1.—M. Duchartre in the chair.—MM. G. Seguy and Verschaffel gave a description of a photometer founded upon the principle of Crooke's radiometer.—M. Faye announced the publication of the *Connaissance des Temps* for 1892.—Influence of altitude on the development of plants, by M. Gaston Bonnier. The author has observed that the amount of carbon dioxide decomposed by plants increases with the altitude. Plants cultivated in an Alpine climate undergo a modification of their functions such that the chlorophyllian assimilation and transpiration are augmented, whilst respiration and transpiration in the dark appear little modified or slightly diminished.—On the chlorophyllian assimilation of trees with red leaves, by M. Henri Jumelle. The author has investigated the difference of physiological functions in the leaves of the green and red type of such trees as the beech, sycamore, elm, &c. He finds: (1) in trees with red or coppery-coloured leaves the chlorophyllian assimilation is always more feeble than in trees of the same kind having green leaves; (2) the intensity in the copper beech and purple sycamore is only about one-sixth that of the ordinary types of the same trees.—On the oospores formed by the fusion of multi-nuclei sexual elements, by M. P. A. Dangeard. The author has studied the sexual reproduction of plants of a lower order.—First observations on the cyclone of August 19 in Jura, by M. Bourgeat. A circumstantial account of the St. Claud cyclone is given. It is noted that the lower parts of the region visited by the storm suffered the most, that the direction of the gyratory movement was opposite to that of the hands of a watch, that the velocity of translation was about 1 kilometre a minute, and that the zone ravaged had a breadth from 500 to 1000 metres.—On the signification of the word "cyclone," by M. H. Faye. It was remarked by M. Faye that although all the papers and the author of the preceding note had named the St. Claud storm a cyclone, yet really it was a tornado. The difference between the two phenomena was pointed out, it being noted that the base of a cyclone is considerably larger than that of the St. Claud storm, and has a well-defined region of calm at its centre.

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